Why Your Company Should Explore Minnesota

A century of iron mining has barely scratched the surface of Minnesota's mineral wealth. Thousands of square miles of Minnesota—encompassing promising greenstone belts, sedimentary basins and intrusive rocks await exploration. We invite you to explore Minnesota. Here are seven reasons to accept our invitation:

1. **Minnesota has land for exploration.** Your company will have access to nearly 12 million acres of state-owned mineral rights available for long-term lease.
2. **Minnesota has excellent mineral potential.** Much of Minnesota's geologic terrane is a continuation of the mineral-rich Canadian Shield of Ontario and Quebec, which has yielded gold, silver, zinc, copper, nickel, diamonds, titanium, and other precious metals and base metals.
3. **Minnesota has an extensive geological database.** Drill core totaling more than three million feet, collected from many areas and formations, has been stored and cataloged for your reference and analysis. Geologic maps and results of geophysical and geochemical surveys are also available.
4. **Minnesota has a century-long tradition of mining.** Since the first load of iron ore was shipped from northern Minnesota more than 100 years ago, Minnesotans have realized the benefits of mineral development. The state's strong environmental regulations are well established and administered equitably. We make regulatory decisions promptly and predictably according to well-established precedents.
5. **Over $2 billion in capital has been invested in mining in the last 5 years.** Mining companies are investing in their Minnesota future.
6. **Minnesota has trained workers and support industries.** A skilled labor force and network of support industries have grown to support Minnesota's mining industry; so when you need labor or supplies, you won't have far to look.
7. **Minnesota has roads, rails, ports, and power.** No matter where you go in Minnesota, you're never far from the highways, railroads, ports, and utilities you need to get your development off the ground.

Minnesota Has Excellent Mineral Potential

Minnesota's diverse bedrock geology ranges from early Archean to Cretaceous (Fig. 1). The state's greatest mineral potential lies in its extensive Precambrian geology, of which four terranes are particularly promising:

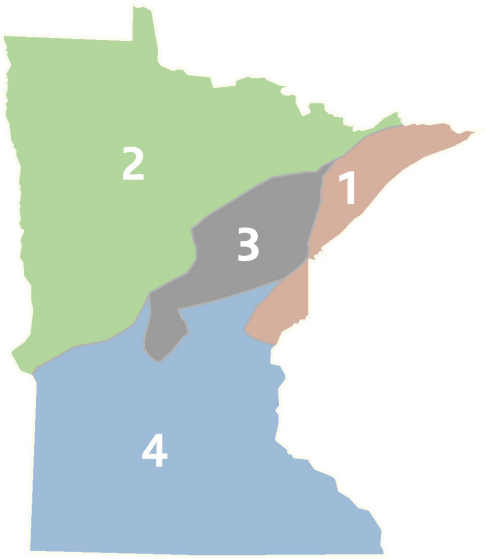

Figure 1. Generalized geologic bedrock map of Minnesota.

1. **The Duluth Complex and associated rocks.** This terrane contains most of the state's active non-ferrous mineral leases. The Minnesota Department of Natural Resources (DNR) estimates the identified copper-nickel resource of the area at about 4.4 billion tons averaging 0.66% copper and 0.2% nickel. This terrane also has significant titanium resources. Drilling has indicated the presence of other strategic minerals, such as chromium, vanadium, cobalt, and platinum-group elements.
2. **The Superior Province, which encompasses the northwestern third of Minnesota and represents a continuation of the mineral-rich Canadian Shield.** Canadian gold discoveries have stimulated leasing in the Minnesota portion of the Superior Province. Most exploration in this area has been for gold, zinc-copper massive sulfides with various by-products, and magmatic sulfide deposits containing copper, nickel, and platinum-group elements.
3. **Variably metamorphosed Middle Precambrian sedimentary and volcanic rocks, including the Mesabi and Cuyuna iron ranges, with known reserves of iron and manganese.** Recent exploration has focused on base metals.
4. **Southern Minnesota's Archean migmatitic gneisses, younger sedimentary rocks, batholithic granitic rocks, and deformed volcanics.** Limited exploration has focused on Precambrian magmatic copper, nickel, PGM deposits and Paleozoic lead-zinc deposits in the southeast, base metals and precious metals in the Precambrian basement, and manganese in the southwest.

Minnesota Has An Extensive Geological Database

When you explore Minnesota's geology, you have direct access to an extensive geological database. An important source of information is the large, well-cataloged drill core library, which houses for your inspection and analysis more than three million feet of diamond drill core, referenced to exact descriptions of hole locations. The library includes drill core samples taken from across the state during the past century.

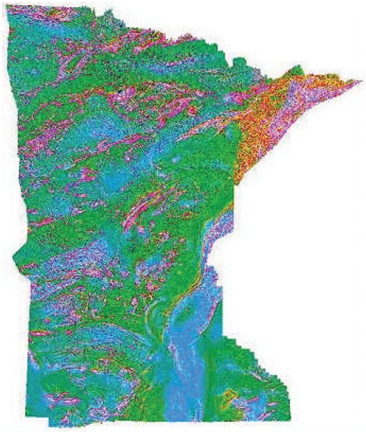

Figure 2. Minnesota Geological Survey computer-generated aeromagnetic map. Image is reduced in size and density; color added.

Logs, assays, geophysical, and geochemical surveys are available to you in Department of Natural Resources' (DNR) exploration company terminated lease files. The DNR's Division of Lands and Minerals can provide information about state land leasing, royalty rates, reclamation guidelines, and other pertinent facts.

Geologic maps and outstanding high-resolution aeromagnetic maps of (Fig. 2) the entire state have been published by the Minnesota Geological Survey. Aeromagnetic data are available on colored and black-and-white contour maps, on computer-generated shaded relief maps, and to download for your own interpretation.

Extensive information is freely available on the Minnesota Geological Survey web site, as well as on the DNR website http://minarchive.dnr.state.mn.us. (Fig. 3). More and more records are being made digital and web accessible.

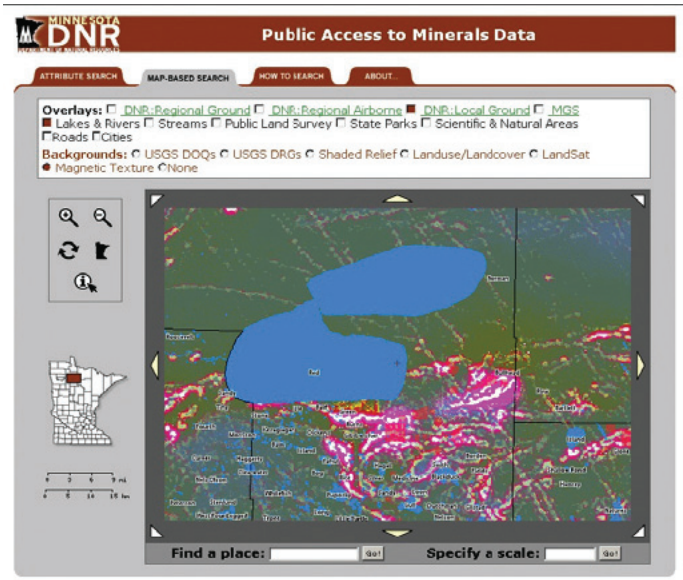

Figure 3. These public documents provide a rich source of information for future exploration, environmental research, and historical minerals research.

Minnesota Has Land For Exploration

If you have a target mineralization model in mind, you can test it in the nearly 12 million acres of mineral rights the state administers. Neither the state nor the federal government uses the claim-staking method in Minnesota. Each year the state awards leases for state-owned mineral rights according to competitive royalty bids. Areas that have no competitive bids later become available through lease by application. Under some circumstances, state leases can be negotiated. Fifty-year leases cover exploration and mining; so you can secure a good land position early in your program.

Moreover, mineral leases are available on many of the 3.4 million acres of federal land in Minnesota. Some 82 percent of this land is managed by the U.S. Forest Service in the Chippewa National Forest in north-central Minnesota and the Superior National Forest in the northeast.

Leases also can be negotiated on millions of acres of privately held mineral rights in the state (Fig. 4).

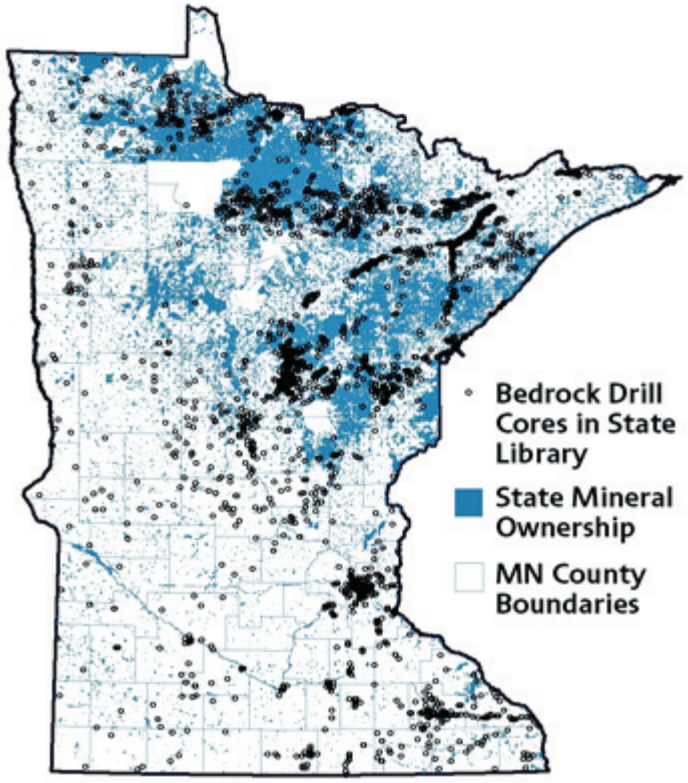

Figure 4.
Public land and mineral rights are scattered throughout Minnesota but are most concentrated in the north. Exploratory drilling has been heaviest in the northeast, especially on the Mesabi, Vermilion, and Cuyuna iron ranges. The map depicts 40-acre tracts where drilling has occurred and from which drill core is available for inspection.

Minnesota Has a Century-Long Tradition of Mining

Though excellent mineral potential is essential to an exploration program, it alone is not enough. A company also must be reasonably assured that if it finds a worthwhile deposit it can mine, it will not be hamstrung by delays.

In Minnesota, this assurance comes in the form of well-defined procedures that have evolved during a century of mining for taconite, iron, dimension stone, silica sand, and other materials. This long association with mining has taught Minnesotans how to accommodate mineral development while protecting the environment and the state's own economic interests.

Minnesota's strong environmental regulations, well-established permitting procedures, and long-standing leasing laws are in place. Staff members from the DNR's Division of Lands and Minerals and other state regulatory agencies are available to meet with your company to explain these rules and advise you on permitting procedures.

Figure 5. More than 100 million tons of taconite ore are mined per year in Minnesota.

Minnesota Has Trained Workers and Support Industries

Minnesotans know mining (Fig. 5). When you explore for minerals or mine in Minnesota, you have access to skilled, educated workers, established mining-supply companies, and experienced consultants.

Minnesota has a strong system of universities, technical-vocational institutions, and public and private colleges. Its labor force is highly educated. Minnesota's high-school completion rate is better than 90 percent. About half of these graduates pursue some kind of postsecondary education. Decades of iron mining have fostered the growth of mining-related industries. The taconite mining industry purchases goods and services from hundreds of supplier/vendor businesses in more than 200 communities. Whether you need drill bits, shovel repairs, or geophysical consultants, you can find them in Minnesota.

Explore the Possibilities

Minnesota offers what you need to get your mineral-development program off the ground:

- Land for exploration
- Excellent mineral potential
- An extensive geological database
- A tradition of mining and established regulations
- Trained workers and experienced support industries
- Existing utilities and transportation

So, when you launch your next mineral-exploration project, consider the reasons to come to Minnesota.

Minnesota Has Roads, Rails, Ports and Power

Any site you explore or mine is within reach of freight haulers and power lines (Fig. 6). Highways reach all corners of the state. Even in the sparsely settled north, little land is more than a few miles from all-weather highways suitable for large trucks.

More than 4,500 miles of railroad track connect all Minnesota cities larger than 25,000 and link the state to major cities and ports throughout the country. Minnesota has four class-one rail carriers: Burlington Northern Santa Fe, Canadian National, Canadian Pacific, and Union Pacific. Several regional lines operate in Minnesota as well.

Minnesota's northern country borders the state's four Great Lakes cargo ports. Duluth-Superior, a foreign-trade zone operated by a port authority, ships taconite pellets, coal, grain, and other commodities. The other three ports—Two Harbors, Taconite Harbor, and Silver Bay—handle taconite pellets.

Mississippi River ports in southeastern Minnesota ship coal, chemicals, stone, clay, gravel, and other raw materials.

Reliable electricity is available at competitive rates across the state through a network of power suppliers. Natural gas pipelines of substantial capacity span southern Minnesota and much of northern Minnesota.

For more information, contact:

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Drill Core Library, Economic Geology, Exploration, Reclamation
Minnesota Department of Natural Resources
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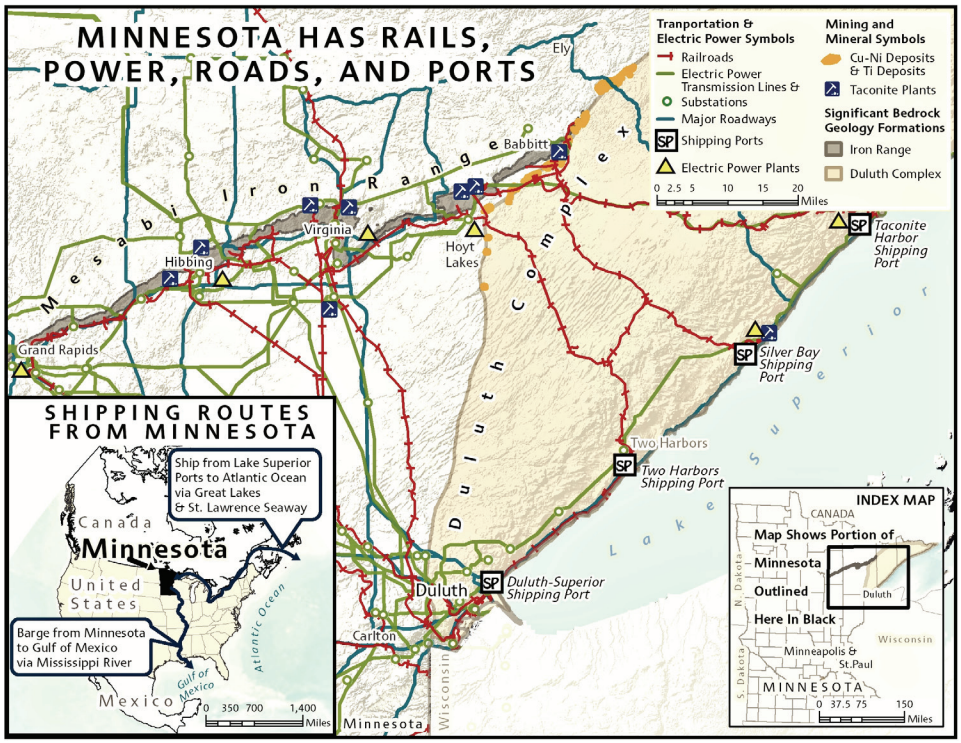

Figure 6. Roads, rails, Lake Superior ports, and power plants that are related to mining on the Mesabi Iron Range and the developing Cu-Ni-PGE mineral deposits of the Duluth Complex.